

REMARKS

Claims 1-21 are pending. Reconsideration and allowance of all pending claims is respectfully requested in view of the preceding original claims and following remarks.

Claim Rejections Under 35 U.S.C. §103

Claims 1-21 are rejected under 35 U.S.C. §103 (a) over U.S. Patent 5,579,026 to Tabata (hereafter Tabata) in view of U.S. Patent 5,124,659 to Green (hereafter Green). This rejection is respectfully traversed.

Tabata appears to be directed to an image display apparatus of head mounted type. The apparatus includes first and second liquid crystal display panels for displaying first and second images to be observed by right and left eyes, respectively, of a user wearing the image display apparatus. The apparatus further includes an optical system for forming virtual images of the displayed first and second images such that the virtual images can be seen by the user, and a controller for controlling electronically at least one of position, posture, size and shape of the first second displayed images. Green appears to be directed to a liquid crystal display device. In the display device, each pixel is formed of four separately energizable areas that have relative light outputs in the ratio 1:2:4:8 respectively, allowing a range of 16 grey levels to be achieved by appropriate selection of areas.

However, Tabata and Green, individually and in combination, do not disclose or suggest “determining at least one of a motion, brightness or color characteristic from the inner region display signal; generating an outer region display signal using the at least one motion, brightness or color characteristic; ...displaying an outer region of the image on the display using the outer region display signal, wherein the outer region is of substantially lower resolution than the inner region” as recited in claim 1 (emphasis added).

The Examiner concedes on page 2 of the Office Action that Tabata does not disclose a display comprising an inner region and an outer region. However, the Examiner asserts on page 3 of the Office Action that “Green discloses in figure 1 that pixel of a display device comprising an inner and outer regions,” and that “[i]t would have been obvious to one of ordinary skill in the art at the time the invention was made to implement the teachings of using the regions as taught by Green in the display system of Tabata because this would provide the range of the levels to be achieved by appropriate selection of areas.” Applicant respectfully disagrees.

Figure 1 of Green is a representation of a pixel of a display device. Each pixel is formed of four areas I, II, III, IV that have light outputs in the ratio 1:2:4:8 respectively, allowing a range of 16 grey levels that can be achieved by appropriate selection of areas (see

column 3, lines 1-5 of Green). However, separating each pixel of a display device into four areas is different from displaying an inner region and an outer region of an image on a display device. Pixels are small discrete elements that together constitute an image on a display device. Green arranges a plurality of pixels in a liquid crystal display so that different bit patterns cause the pixels to change brightness only without any apparent positional change (see column 3, lines 6-11 of Green). However, nowhere in Figure 1 or the cited language does Green disclose or suggest “displaying an outer region of the image on the display using the outer region display signal.”

Furthermore, Tabata and Green, individually or in combination, do not disclose or suggest that the outer region display signal is generated using the at least one motion, brightness or color characteristic from the inner region display signal. This limitation is not specifically addressed by the Examiner in rejecting claim 1, and Applicant respectfully submits that this feature is novel. Additionally, Tabata and Green, individually or in combination, do not disclose or suggest that “the outer region is of substantially lower resolution than the inner region.” The references do not teach or suggest an inner region and an outer region for displaying an image, let alone the limitation that the outer region is of substantially lower resolution than the inner region. Since Tabata and Green, individually or in combination, do not disclose or suggest all of the elements of claim 1, claim 1 is allowable.

Claims 2-7 are allowable because they depend from allowable claim 1 and for the additional features they recite. Withdrawal of the rejection of claims 1-7 under 35 U.S.C. §103 (a) is respectfully requested.

Regarding claim 8, as noted above with respect to claim 1, Tabata and Green, individually and in combination, do not disclose or suggest “a display having an inner region and an outer region of substantially lower resolution than the inner region; ... the controller generates ... an outer region display signal using at least of one of a motion, brightness or color characteristic from the inner region display signal” as recited in claim 8 (emphasis added). Since Tabata and Green, individually and in combination, do not disclose or suggest all of the elements of claim 8, claim 8 is allowable.

Claims 9-12 are allowable because they depend from allowable claim 8 and for the additional features they recite. Withdrawal of the rejection of claims 8-12 under 35 U.S.C. §103 (a) is respectfully requested.

Regarding claim 13, Tabata and Green, individually and in combination, do not disclose or suggest “determining an amount of distortion for image signal data, the distortion acting to distort a source image conveyed by the image signal data so that a field of view of

the source image is expanded; adjusting the image signal data so that the source image conveyed by the image signal data is distorted according to the determined amount of distortion; generating a display signal using the adjusted image signal data” as recited in claim 13 (emphasis added).

The feature of adjusting image signal data according to an appropriate amount of distortion determined for the image signal data is not specifically addressed by the Examiner in rejecting claim 13. The Office Action merely states on page 2 that Tabata discloses at column 2, lines 43-49 that the system having an adjusting in the image signal. Applicant respectfully traverses. Tabata merely recites, at column 2, lines 43-49, that the position and size of a virtual image in the space and the size of the virtual image can be changed without moving mechanically or physically the display panel and/or optical system. Tabata does not provide the details of the change, and certainly does not disclose or suggest the feature of “determining an amount of distortion for image signal data, the distortion acting to distort a source image conveyed by the image signal data so that a field of view of the source image is expanded.” Green does not cure this defect of Tabata. Since Tabata and Green, individually and in combination, do not disclose or suggest all of the elements of claim 13, claim 13 is allowable.

Claims 14-15 are allowable because they depend from allowable claim 13 and for the additional features they recite. Withdrawal of the rejection of claims 13-15 under 35 U.S.C. §103 (a) is respectfully requested.

Regarding claim 16, as noted above with respect to claims 1 and 13, Tabata and Green, individually and in combination, do not disclose or suggest “a display having an inner region and an outer region; and a controller ... obtains image signal data from a source image signal and generates a display signal by determining an amount of distortion for the image signal data, and adjusting the image signal data so that a source image conveyed by the image signal data is distorted according to the determined amount of distortion, the distortion distorting the source image so that a field of view of the image is expanded to the outer region of the display” as recited in claim 16 (emphasis added). Since Tabata and Green, individually and in combination, do not disclose or suggest all of the elements of claim 16, claim 16 is allowable.

Claims 17-19 are allowable because they depend from allowable claim 16 and for the additional features they recite. Withdrawal of the rejection of claims 16-19 under 35 U.S.C. §103 (a) is respectfully requested.

Regarding claim 20, as noted above with respect to claims 1 and 13, Tabata and

Green, individually and in combination, do not disclose or suggest "optics arranged in the wearable display, wherein the optics modify an image displayed by the display by distorting an outer region of the image by a greater amount than an inner region of the image so that a field of view of the image is increased" as recited in claim 20 (emphasis added). Since Tabata and Green, individually and in combination, do not disclose or suggest all of the elements of claim 20, claim 20 is allowable.


Claim 21 is allowable because it depends from allowable claim 20 and for the additional features it recites. Withdrawal of the rejection of claims 20-21 under 35 U.S.C. §103 (a) is respectfully requested.

In view of the above remarks, Applicant respectfully submits that the application is in condition for allowance. Prompt examination and allowance are respectfully requested.

Should the Examiner believe that anything further is desired in order to place the application in even better condition for allowance, the Examiner is invited to contact Applicant's undersigned representative at the telephone number listed below.

Respectfully Submitted,

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